ZONING WARRANT ARTICLE: Electric Vehicle Charging Requirements

ARTICLE 00
Submitted by: The Department of Planning and Community Development

To see if the Town will amend **Article VI-Vehicular Service Uses Requirements** of the Brookline Zoning By-Law as follows:

1 - By amending Section 6.00 with following new Paragraph 7 after Paragraph 6:

7. Parking facilities shall be equipped with EV Ready Spaces C or EV Ready Spaces R as defined in Section 6.10 or with EV Ready Spaces as defined in the latest edition of the Massachusetts State Building Code to provide scalable, reliable, and accessible EV charging, to implement the Town's sustainability policy, and to minimize the challenges associated with retrofits.

2 - By amending Section 6.04 deleting Paragraph 15 in its entirety (strike-through indicates deleted text):

~~15. ELECTRIC VEHICLES For Parking Areas, Non-residential and Residential, with 15 or more parking spaces, at least 15% of the total parking spaces, and not fewer than two parking spaces, shall be EV Ready Spaces. The definitions of EV Ready Space, Electric Vehicle, and Electric Vehicle Supply Equipment (EVSE) are as defined in the latest edition of the Massachusetts State Building Code. For additions and renovations to existing buildings, exceptions to this paragraph shall be consistent with the latest edition of the Massachusetts State Building Code.~~

3 - By amending Article VI adding the following new Section 6.10 after Section 6.09:

Section 6.10 – OFF-STREET EV READINESS

1. Definitions

Terms used in Section 6.10 shall be defined as follows. Capitalized terms in Section 6.10 not defined below shall be as defined in Article II.

a. Massachusetts State Building Code - International Building Code Volume ("MSBC-IBC"): The volume of the latest edition of the Massachusetts State Building Code, which regulates buildings including but not limited to:

   (1) Three-Family Dwellings of any number of stories
   (2) Buildings four stories or more
   (3) Buildings not covered by the International Residential Code

b. Massachusetts State Building Code - International Residential Code Volume ("MSBC-IRC"): The residential volume of the latest edition of the Massachusetts State Building Code, which regulates buildings including but not limited to:

(1) One-Family Dwellings three stories and under
(2) Two-Family Dwellings three stories and under
(3) Townhouses three stories and under

c. Electric Vehicle ("EV') and Electric Vehicle Supply Equipment ("EVSE") are as defined in the latest edition of the Massachusetts State Building Code, as may be amended.

d. Electric Vehicle Charging Space Commercial ("EV Ready Space C"): Pertains to buildings regulated by the MSBC-IBC. Each parking space shall be designed to accommodate Level 2 EVSE servicing EVs in one of the following standards:

(1) **Minimum Prescriptive Standard:** 100% of parking spaces are EV Ready as defined in the latest edition of the Massachusetts State Building Code; or

(a) For Sec. 6.10.1.d.1: If the latest edition of the MSB-IBC allows the installation of a 20-amp branch circuit for EV Ready Spaces as an exception, such installation shall be as follows: one individual 20-amp branch circuit at 240 volts per one parking space for a minimum of 100% of total parking spaces.

Or

(2) **Minimum Performance Standard:** An Automatic Load Management System may be used to deliver a minimum of ~~2.1~~1.9 kW of power each hour to ~~-~~each EV Ready Space C or EVSE controlled by the ALMS, assuming that 100% of parking spaces are occupied by a charging EV. The installation of EVSE is not required to demonstrate compliance.

(a) Alternatively, use of Level 2 EVSE with dual ports meets the requirements of this Section, as long as the minimum power transfer to each parking space charging an EV meets the minimum power transfer per hour specified in the Minimum Performance Standard. Use of Level 2 EVSE with dual ports shall be installed to be demonstrate compliance.

(b) A combination of (1) and (2) to serve 100% of parking spaces.

e. Electric Vehicle Charging Space Residential ("EV Ready Space R"): Pertains to buildings regulated by the MSBC-IRC. At least one parking space per Dwelling Unit shall be equipped with one individual branch circuit rated for at least 50 amperes @ 208/220 volts for charging an EV, defined as Level 2 EV charging in the latest edition of the Massachusetts Electrical Code.

f. EV Space: When the term EV Ready Space is used, it shall be as defined in the MSBC-IBC.

g. Automatic Load Management System ("ALMS"): An ALMS allows multiple EVSE to share a circuit or panel automatically reducing power at each EVSE when multiple EVs are charging concurrently as allowed by the latest edition of the Massachusetts Electrical Code. Where ALMS are used, EVSE shall:

(1) be fixed in place;

(2) have restricted access only by the means allowed in the latest edition of the Massachusetts Electrical Code;

3) be sized and rated as required under the latest edition of Massachusetts Electrical Code; and

(4) In case of disruption of the ALMS, each EVSE served by the ALMS shall operate at a reduced level that allows all EVSE to operate concurrently without resulting in overcurrent conditions as specified in the latest edition of the Massachusetts Electrical Code.

h. New Building: A building not in existence on the date the application for a building permit is received by the Building Department.

i. Significantly Rehabilitated Residential Buildings regulated by the MSBC-IBC: The reconfiguration of space and/or building systems in which the Work Area exceeds 50% of the existing Gross Floor Area as defined by the MSBC-IBC, as may be amended.

j. Significantly Rehabilitated Residential Buildings regulated by the MSBC-IRC: The reconfiguration of space and/or building systems in which the Work Area exceeds 75% of the existing Gross Floor Area as defined by the MSBC-IRC, as may be amended.

k. Work Area: The aggregate area of those portions of a building affected by alterations for the reconfiguration of space or building systems, including new floor area added as a result of the alteration, as indicated in the drawings associated with a building permit application. Excluded from the calculation of Work Area are those portions of a building where only repairs, or refinishing or incidental work occur or where work not initially intended by the Applicant is specifically required by an inspector from the Building pursuant to the applicable building code.

l. Level 2 EVSE or Level 2 EV Charging: Shall be as defined in the latest edition of the Massachusetts Electrical Code.

2. Applicable Uses and Requirements

a. In stand-alone Residential Parking Areas or Parking Garages and Parking Areas or Parking Garages of New or Significantly Rehabilitated Residential Buildings regulated by the MSBC-IBC, a minimum of 100% of the total number of parking spaces, and not less than one, shall be EV Ready C.

b. In stand-alone Non-Residential Parking Areas or Parking Garages and Parking Areas or Parking Garages of New or Significantly Rehabilitated Non-Residential Buildings regulated by the MSBC-IBC and with seven parking spaces or more, at least 15% of the total number of parking spaces and not less than one shall be EV Ready as defined in the latest edition of the MSBC-IBC.

c. In Residential Parking Areas or Parking Garages for One- and Two-Family Dwellings meeting the definitions of New Building or Significantly Rehabilitated Residential Buildings regulated by the MSBC-IRC at least one parking space shall be EV Ready R.

d. If the total number of existing parking spaces for Applicable Uses subject to Section 6.10 is increased or expanded by 10 parking spaces or more, the Requirements of Section 6.10.2 (b) shall apply.

e. EV Ready Spaces shall be maintained and shall remain functional for charging EVs.

3. Exemptions

The requirements of Section 6.10 shall not apply to:

a. Uses 25, 25A, 26, 27, 28, and 28A in Section 4.07, Table of Use Regulations

b. Parking Areas or Parking Garages are separated from the meter by a public right-of-way;

c. Loading Bays and Loading Facilities as specified in Sections 6.06 and 6.07;

d. Waldo-Durgin Overlay District: The requirements of Section 6.10 shall not apply to any building being constructed subject to the Waldo-Durgin Overlay District as described in Section 5.06.4.k;

e. Fisher Hill Special Overlay District: The requirements of Section 6.10 shall not apply to any building being constructed subject to the Fisher Hill Special Overlay District as described in Section 5.06.4.l.

4. Exceptions

Reserved

5. Waivers

The Board of Appeals may grant by Special Permit a reduction in whole or in part of the minimum number of EV Ready Spaces C required under Section 6.10 if the Board of Appeals grants or has granted a Special Permit pursuant to Section 6.03.1.b.

6. Rounding

Fractional numbers one-half (0.5) and above shall be rounded up to the nearest whole number.

7. Ventilation

Parking Areas and Parking Garages used for charging EVs indoors shall meet ventilation requirements as specified in the Massachusetts Electrical Code, Massachusetts Mechanical Code, and MSBC-IRC, as applicable. EVSE shall be installed as required per specifications of the EV manufacturer.

8. Materials Required for Plan Reviews, Site Plan Review and/or Design Review, Special Permit and Building Permit Applications:

For EV Ready R, plans stamped by a licensed and qualified electrician shall meet the Building Department's requirements for plan submissions and shall include an electrical service load calculation.

For EV Ready C, p~~P~~lans stamped by an electrical engineer shall meet the Building Department's requirements for plan submissions and shall ~~indicate total calculated continuous duty load~~include an electrical service load calculation.

…or act upon anything else relative thereto.

For Explanation

How minimum power transfer was derived from different Level 2 charging scenarios, depending on single phase (240 volts) or three-phase (208 volts) power supplies:

40 amps / 4 EVSE = 10 amps
10 amps x 208 volts = 2,080 watts or 2.1 kW

32 amps / 4 EVSE = 8 amps
8 amps x 240 volts = 1,920 watts or 1.9 kW

16 amps / 2 EVSE = 8 amps
8 amps x 240 volts = 1,920 watts or 1.9 kW